04 - Iteration Control Structures

Ex. No. : 4.1 **Date: 14/04/2024**

Register No.: 231401001 **Name: Aafrin Fathima N**

Factors of a number

Determine the factors of a number (i.e., all positive integer values that evenly divide into a number).

For example:

Input	Result
20	1 2 4 5 10 20

Program:

```
a=int(input())

for i in range(1,a+1):

    if a%i==0:

        print(i, end=")
```

	Input	Expected	Got	
✔	20	1 2 4 5 10 20	1 2 4 5 10 20	✔
✔	5	1 5	1 5	✔
✔	13	1 13	1 13	✔

Passed all tests! ✔

Ex. No. : 4.2 **Date: 14/04/2024**

Register No.: 231401001 **Name: Aafrin Fathima N**

Non Repeated Digit Count

Write a program to find the count of non-repeated digits in a given number N. The number will be passed to the program as an input of type int.
Assumption: The input number will be a positive integer number >= 1 and <= 25000.
Some examples are as below.
If the given number is 292, the program should return 1 because there is only 1 non--repeated digit '9' in this number
If the given number is 1015, the program should return 2 because there are 2 non-repeated digits in this number, '0', and '5'.
If the given number is 108, the program should return 3 because there are 3 non--repeated digits in this number, '1', '0', and '8'.
If the given number is 22, the function should return 0 because there are NO non--repeated digits in this number.

For example:

Input	Result
292	1
1015	2
108	3
22	0

Program:

```
n=int(input())

digits=str(n)

repeat=set()

unique=set()
```

```
for i in digits:
    if i in unique:
        repeat.add(i)
    else:
        unique.add(i)
count=len(unique-repeat)
print(count)
```

	Input	Expected	Got	
✔	292	1	1	✔
✔	1015	2	2	✔
✔	108	3	3	✔
✔	22	0	0	✔

Passed all tests! ✔

Ex. No. : 4.3 **Date: 14/04/2024**

Register No.: 231401001 **Name: Aafrin Fathima N**

Prime Checking

Write a program that finds whether the given number N is Prime or not. If the number is prime, the program should return 2 else it must return 1.

Assumption: 2 <= N <=5000, where N is the given number.

Example1: if the given number N is 7, the method must return 2

Example2: if the given number N is 10, the method must return 1

For example:

Input	Result
7	2
10	1

Program:

```
N=int(input())

if N==1:

    print("1")

elif N>1:
  for i in range(2,n):
      if(N%i)==0:
            print("1")

            break

       else:
          print("2")
```

	Input	Expected	Got	
✔	7	2	2	✔
✔	10	1	1	✔

Passed all tests! ✔

Ex. No. : 4.4 **Date: 14/04/2024**

Register No.: 231401001 **Name: Aafrin Fathima N**

Next Perfect Square

Given a number N, find the next perfect square greater than N.

Input Format:

Integer input from stdin.

Output Format:

Perfect square greater than N.

Example Input:

10

Output:

16

Program:

```
from math import sqrt
 n=int(input())
while int(sqrt(n))!=sqrt(n):
  n=n+1
  print(n)
```

	Input	Expected	Got	
✔	10	16	16	✔

Passed all tests! ✔

Ex. No. : 4.5 **Date: 14/04/2024**

Register No.: 231401001 **Name: Aafrin Fathima N**

Nth Fibonacci

Write a program to return the nth number in the fibonacci series. The value of N will be passed to the program as input.

NOTE: Fibonacci series looks like –

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, . . . and so on.

i.e. Fibonacci series starts with 0 and 1, and continues generating the next number as the sum of the previous two numbers.

- first Fibonacci number is 0,
- second Fibonacci number is 1,
- third Fibonacci number is 1,
- fourth Fibonacci number is 2,
- fifth Fibonacci number is 3,
- sixth Fibonacci number is 5,
- seventh Fibonacci number is 8, and so on.

For example:

Input:

7

Output

8

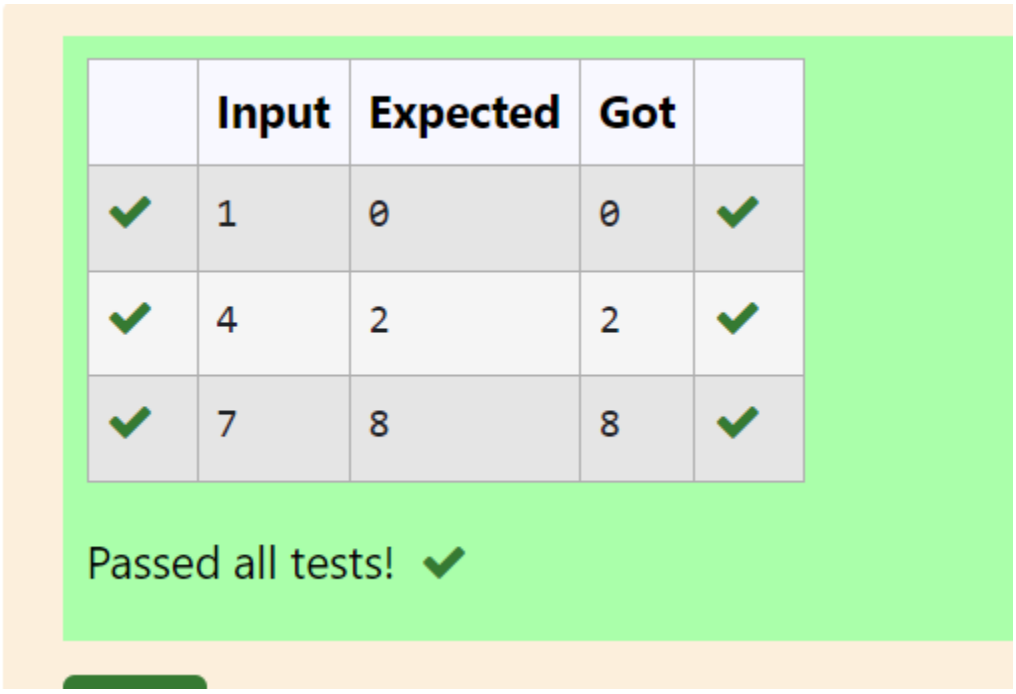
Program:

```
n=int(input())
if n<2:

  print(n-1)

else:
   n=n-1
   fs=[0,1]
```

```
for i in range(1,n):
    fs.append(fs[i]+fs [i-1])
print(fs [n])
```



	Input	Expected	Got	
✔	1	0	0	✔
✔	4	2	2	✔
✔	7	8	8	✔

Passed all tests! ✔

Ex. No. : 4.6 **Date: 14/04/2024**

Register No.: 231401001 **Name: Aafrin Fathima N**

Disarium Number

A Number is said to be Disarium number when the sum of its digit raised to the power of their respective positions becomes equal to the number itself. Write a program to print number is Disarium or not.

Input Format:

Single Integer Input from stdin.

Output Format:

Yes or No.

Example Input:

175

Output:

Yes

Explanation

1^1 + 7^2 +5^3 = 175

Example Input:

123

Output:

No

For example:

Input	Result
175	Yes
123	No

Program:

```
n=int(input())

digits=str(n)
```

```
sum=0
power-1
for i in digits:
        sum+=int(i)**power
        power+=1
if sum==n:
  print("Yes")
else:
  print("No")
```

	Input	Expected	Got	
✔	175	Yes	Yes	✔
✔	123	No	No	✔

Passed all tests! ✔

Ex. No. : 4.7 **Date: 14/04/2024**

Register No.: 231401001 **Name: Aafrin Fathima N**

Sum of Series

Write a program to find the sum of the series 1 +11 + 111 + 1111 + . . . + n terms (n will be given as input from the user and sum will be the output)

Sample Test Cases

Test Case 1

Input

4

Output

1234

Explanation:

as input is 4, have to take 4 terms.

1 + 11 + 111 + 1111

Test Case 2

Input

6

Output

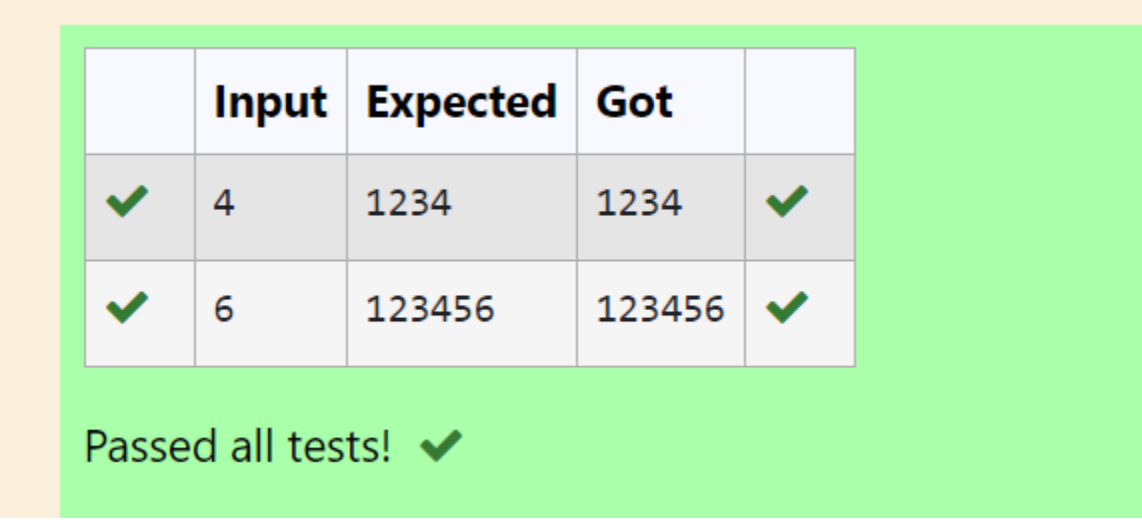
123456

For example:

Input	Result
3	123

Program:

```
n=int(input())
sum=0
term=1
for i in range(1,n+1):
    sum+-term
    term-term*10+1
print(sum)
```



	Input	Expected	Got	
✔	4	1234	1234	✔
✔	6	123456	123456	✔

Passed all tests! ✔

Ex. No. : 4.8 **Date: 14/04/2024**

Register No.: 231401001 **Name: Aafrin Fathima N**

Unique Digit Count

Write a program to find the count of unique digits in a given number N. The number will be passed to the program as an input of type int.
Assumption: The input number will be a positive integer number >= 1 and <= 25000.
For e.g.
If the given number is 292, the program should return 2 because there are only 2 unique digits '2' and '9' in this number
If the given number is 1015, the program should return 3 because there are 3 unique digits in this number, '1', '0', and '5'.
For example:

Input	Result
292	2
1015	3

Program:

```
def count(n):
  digits=str(n)
  unique=list()
  for i in digits:
     if i not in unique:
          unique.append(i)
   return len(unique)
n=int(input())
print(count(n))
```

	Input	Expected	Got	
✔	292	2	2	✔
✔	1015	3	3	✔
✔	123	3	3	✔

Passed all tests! ✔

Ex. No. : 4.9 **Date: 14/04/2024**

Register No.: 231401001 **Name: Aafrin Fathima N**

Product of single digit

Given a positive integer N, check whether it can be represented as a product of single digit numbers.

Input Format:

Single Integer input.

Output Format:

Output displays Yes if condition satisfies else prints No.

Example Input:

14

Output:

Yes

Example Input:

13

Output:

No

Program:

```
a=int(input())
if a%2==0 or a%3==0 or a%5==0 or a%7==0 or a%9==0:
  print("Yes")
else:
  print("No")
```

	Input	Expected	Got	
✔	14	Yes	Yes	✔
✔	13	No	No	✔

Passed all tests! ✔

Correct

Ex. No. : 4.10 **Date: 14/04/2024**

Register No.: 231401001 **Name: Aafrin Fathima N**

Perfect Square After adding One

Given an integer N, check whether N the given number can be made a perfect square after adding 1 to it.

Input Format:

Single integer input.

Output Format:

Yes or No.

Example Input:

24

Output:

Yes

Example Input:

26

Output:

No

For example:

Input	Result
24	Yes

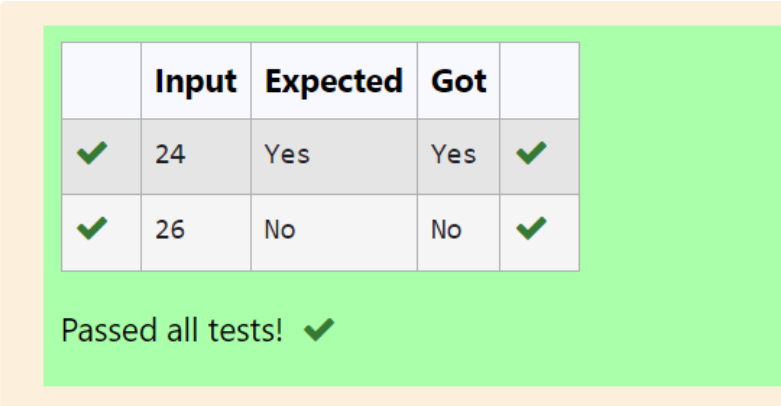
Program:

```
import math

a=int(input())

b=math.sqrt(a+1)
```

```
if b.is_integer():
    print("Yes")
else:
    print("No")
```



	Input	Expected	Got	
✔	24	Yes	Yes	✔
✔	26	No	No	✔

Passed all tests! ✔